

WEST Search History

DATE: Tuesday, April 01, 2003

Set Name Query
side by side**Hit Count Set Name**
result set*DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR*

L4	L3 and identif\$	6	L4
L3	L2 and (Internet or web or www)	6	L3
L2	L1 and ((common\$ or similar or "same") with (pattern or interest\$))	6	L2
L1	(collaborat\$ adj2 brows\$) and @ad<=19990601	12	L1

END OF SEARCH HISTORY

WEST

[Generate Collection](#)[Print](#)

L3: Entry 1 of 6

File: USPT

Jun 25, 2002

US-PAT-NO: 6411989

DOCUMENT-IDENTIFIER: US 6411989 B1

TITLE: Apparatus and method for sharing information in simultaneously viewed documents on a communication system

DATE-ISSUED: June 25, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Anupam; Vinod	Scotch Plains	NJ		
Gehani; Narain H.	Summit	NJ		
Kadambari; Viswanath	Herndon	VA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
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APPL-NO: 09/ 221069 [PALM]

DATE FILED: December 28, 1998

PARENT-CASE:

RELATED APPLICATIONS U.S. patent applications Ser. No. 09/221,068 still pending and Ser. No. 09/221,067 still pending were filed concurrently herewith. U.S. patent application Ser. No. 09/133,716 now U.S. Pat. No. 5,991,796 was filed on Aug. 13, 1998 which is a continuation of U.S. patent application Ser. No. 08/683,072 which was filed on Jul. 16, 1996, now U.S. Pat. No. 5,991,796 issued Nov. 23, 1999, and U.S. patent application Ser. No. 08/850,532 which was filed on May 2, 1997, now U.S. Pat. No. 6,070,185 issued May 30, 2000.

INT-CL: [07] G06 F 17/00

US-CL-ISSUED: 709/204; 709/206, 709/205, 709/217, 709/219, 709/203

US-CL-CURRENT: 709/204; 709/203, 709/205, 709/206, 709/217, 709/219

FIELD-OF-SEARCH: 709/204, 709/205, 700/204, 700/205, 700/206, 700/202, 700/217, 700/219, 700/227, 700/228, 700/230

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

[Search Selected](#)[Search ALL](#)

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	5862330	January 1999	Aunpam et al.	709/204
<input type="checkbox"/>	5991796	November 1999	Anupam et al.	709/206
<input type="checkbox"/>	6070185	May 2000	Anupam et al.	709/204
<input type="checkbox"/>	6151020	November 2000	Palmer et al.	345/329
<input type="checkbox"/>	6151622	November 2000	Fraenkel et al.	709/205
<input type="checkbox"/>	6175842	January 2001	Kirk et al.	707/513
<input type="checkbox"/>	6181689	January 2001	Choung et al.	370/352
<input type="checkbox"/>	6230171	May 2001	Pacifici et al.	707/512
<input type="checkbox"/>	6240443	May 2001	Suzuki et al.	709/204

OTHER PUBLICATIONS

Souya et al. Joint Class Experiments Based on Realtime Web-browser Synchronization. IEEE Online. Jul., 15-17 1998. pp 367-372.*
Min et al. A Distributed Multimedia Conferencing System for Distance Learning. IEEE Online. Apr. 20-21, 1998.*
Lee et al. Design and Implementation of Important Applications in a Java-based Multimedia Digital Classroom. Jun. 11-13, 1997. pp 264-270.*
U.S. application No. 09/133,716, Anupam et al., filed Aug. 13, 1998.
U.S. application No. 08/850,532, Anupam et al., filed May 2, 1997.
U.S. application No. 08/683,072, Anupam et al., filed Jul. 16, 1996.

ART-UNIT: 2153

PRIMARY-EXAMINER: Burgess; Glenton B.

ASSISTANT-EXAMINER: Salad; Abdullahi E.

ABSTRACT:

Computer users may utilize different web browsers to access a server system on the World Wide Web (WWW) to create or join a collaborative session. One or more controllers connect the users or collaborators in a session in the server system. This is realized by establishing a so-called "shared Web-top", i.e., a work space, in which different in-document applications can be run and can be interactively, collaboratively shared by a plurality of users. Specifically, this is realized by employing a surrogate that includes a polling loop which periodically checks a shared document structure for changes in prescribed properties, and transmits the detected changes to surrogates of other users, i.e., at least one other collaborator, via a communication channel. To this end, a prospective user of the shared Web-top accesses a system, which transmits mobile code to the user's computer to create a surrogate thereon. The surrogates created for the users of the shared Web-top are connected by at least one controller in the system and individually serve as an interface between the controller and the respective browsers on the users computers. Advantageously, through our unique use of the polling loop in the surrogate, functionality is realized in which, as one user inputs data into a shared document, for example, into one or more forms in a document, the same data appears in the other user's browser, via the detected changes in prescribed properties of the one or more forms being transmitted over the communication channel to the users' computers and, therein, to their surrogates.

42 Claims, 6 Drawing figures



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L3: Entry 1 of 6

File: USPT

Jun 25, 2002

DOCUMENT-IDENTIFIER: US 6411989 B1

TITLE: Apparatus and method for sharing information in simultaneously viewed documents on a communication system

Abstract Text (1):

Computer users may utilize different web browsers to access a server system on the World Wide Web (WWW) to create or join a collaborative session. One or more controllers connect the users or collaborators in a session in the server system. This is realized by establishing a so-called "shared Web-top", i.e., a work space, in which different in-document applications can be run and can be interactively, collaboratively shared by a plurality of users. Specifically, this is realized by employing a surrogate that includes a polling loop which periodically checks a shared document structure for changes in prescribed properties, and transmits the detected changes to surrogates of other users, i.e., at least one other collaborator, via a communication channel. To this end, a prospective user of the shared Web-top accesses a system, which transmits mobile code to the user's computer to create a surrogate thereon. The surrogates created for the users of the shared Web-top are connected by at least one controller in the system and individually serve as an interface between the controller and the respective browsers on the users computers. Advantageously, through our unique use of the polling loop in the surrogate, functionality is realized in which, as one user inputs data into a shared document, for example, into one or more forms in a document, the same data appears in the other user's browser, via the detected changes in prescribed properties of the one or more forms being transmitted over the communication channel to the users' computers and, therein, to their surrogates.

Application Filing Date (1):

19981228

Brief Summary Text (2):

The invention relates to systems and methods for providing communications between users over a computer network and, more particularly, to systems and methods for providing collaborative browsing of information and interactive communications on the World Wide Web (WWW) or the "web".

Brief Summary Text (4):

Computer users can access many resources on an expansive international network of computer networks known as the Internet. WWW is a graphical subnetwork of the Internet. With common "web browser" software, for example, the NETSCAPE browser, users can readily access Internet information or services provided by web servers on the WWW.

Brief Summary Text (5):

Many Internet services allow communications between users. For example, two or more computer users may access a designated web server providing a "text-chat" service, which allows users to communicate interactively in text with one another in real time.

Brief Summary Text (6):

Computer users can also share web browsing experiences using a SHARED MOSAIC browser. To that end, each user is required to have his/her own copy of the SHARED MOSAIC software on a computer. To establish links between a user and his/her collaborators, the user needs to communicate to the collaborators beforehand, for example, by email or telephone, an Internet protocol (IP) port number identifying his/her particular browser. Then, the collaborators run the respective browsers on

their computers and enter the IP port number as communicated, thereby establishing the links through the Internet between the user's computer and the collaborators' computers. As the user is visiting a web site of interest, he/she can select an option provided by the browser to share with his/her collaborators the same information from the web site through the established links.

Brief Summary Text (8):

Notwithstanding the prior known collaborative browser arrangements, a problem still exists concerning the users being able to collaborate interactively regarding the content of a shared document or the like.

Brief Summary Text (10):

This and other problems and limitations of prior interactive collaboration apparatus and/or techniques are overcome by establishing a so-called "shared Web-top", i.e., a work space, in which different in-document applications, for example, within a document page, can be run and can be interactively, collaboratively shared by a plurality of users.

Brief Summary Text (11):

Specifically, this is realized by employing a surrogate that includes a polling loop that periodically checks a shared document structure for changes in prescribed properties, and transmits the detected changes to surrogates of other users, i.e., at least one other collaborator, via a communication channel. To this end, a prospective user of the shared Web-top accesses a system that transmits code to the user's computer to create a surrogate thereon. The surrogates created for the users of the shared Web-top are connected by at least one controller in the system and individually serve as an interface between the controller and the respective browsers on the users' computers.

Drawing Description Text (2):

FIG. 1 is a simplified block diagram of a server system including an embodiment of the invention for obtaining and exchanging information over the WWW;

Detailed Description Text (2):

FIG. 1 shows, in simplified block diagram form, server system 100 embodying the principles of the invention, which is connected to the World Wide Web (WWW) 101 as a web server. Server system 100 includes WWW server 102, controller 103 and manager 104. Advantageously, server system 100 operates compatibly with standard web browsers such as the NETSCAPE browser, the standard hypertext transfer protocol (HTTP) and hypertext markup language (HTML). Among other things, server system 100 provides users with services of (a) collaborative browsing of HTML documents at various web sites on WWW 101, and (b) real-time, interactive collaborative communications between the users. Specifically, with server system 100, during a collaborative browsing session, multiple users or collaborators are allowed to synchronously and collaboratively input data into a document or otherwise edit the document. The collaborators may also interact with one another through text-chat communications, for example. In addition, server system 100 allows users to join and exit an on-going session and is capable of scaling its capacity to accommodate a changing number of sessions and collaborators in a particular session.

Detailed Description Text (3):

As shown in FIG. 1, a user may utilize computer U-1 to access system 100 over WWW 101 at a predetermined URL. Computer U-1 may be a conventional personal computer (PC) running standard web browser 106-1, such as the NETSCAPE browser. As soon as U-1 is connected to server system 100 through link 107-1, manager 104 in system 100 starts communicating with U-1 through web browser 106-1 and WWW server 102 having a common gate interface (CGI).

Detailed Description Text (4):

Manager 104 includes a service routine shown in FIG. 2A and FIG. 2B for helping a user to establish an interactive collaborative browsing session. FIGS. 2A and 2B illustrates the steps of a service routine including an embodiment of the invention. At step 201, manager 104 causes a "home page" to be displayed on U-1, which greets the user, and describes the service provided by system 100. Manager 104 then elicits from U-1 user information, as indicated at step 202. This information includes a user identification (ID), password and other administrative data necessary for ensuring that the user is an authorized user. At step 203, manager 104 queries U-1 as to whether the user wants to create a session, or join an on-going session. In this instance, the user of U-1 chooses to create a session. Manager 104, at step

204, then prompts the user for the details on the session to be created, such as the purpose of or the document to be addressed during the session, and whether it is a private or public session. By way of example, if it is a private session, a would-be collaborator must identify the user by his/her user ID who created the session in order to join it. It is assumed that all sessions would be private that deal with filling-in personal or otherwise sensitive user information into documents, i.e., forms or the like. If it is a public session, the topic of or the document to be edited or filled in during the session is listed and can be reviewed by a prospective collaborator. In this embodiment of the invention, whether private or public, the session is interactive among the collaborators in order to collaboratively input data into the document, for example, into one or more forms in the document. A simple example document 110-1 including form 111-1 is shown in FIG. 1. Note that in this embodiment, all of documents 110-1 through 110-N and forms 111-1 through 111-N are identical at all user computers U-1 through U-N.

Detailed Description Text (7):

After the new session starts, the user of computer U-1 may change the URL with browser 106-1 to a web site to obtain information concerning the medical form to be completed. The new URL is transmitted by surrogate 108-1 to controller 103, where the new URL is recorded and conveyed to the surrogates of other collaborators, if any, in the same session. At the same time, browser 106-1 accesses a web server at the new URL, and opens on computer U-1 a HTML document 110-1 provided by the web server, including in this example, an insurance medical form 111-1.

Detailed Description Text (8):

A second user may utilize computer U-N to access system 100 (FIG. 1) at the predetermined URL to join an on-going session. After computer U-N establishes a link 107-N (FIG. 1) to WWW server 102, manager 104 similarly performs steps 201 and 202 of FIG. 2A, previously described. However, at step 203, the user of U-N in this instance chooses to join an on-going session. As such, manager 104 queries U-N as to whether the second user wants to join a private session or public session, as indicated at step 208 in FIG. 2B. In this instance, if the second user chooses to join a public session, manager 104 would proceed to steps 209 and 210. Otherwise, the second user needs to identify the private session to be joined, by the user ID of the creator of that session, as indicated at step 211.

Detailed Description Text (10):

At that point, a message is sent by controller 103 to each collaborator's computer connected thereto about the presence of a new collaborator. The user of U-N is then afforded a chance to visit the sequence of URLs that the session has gone through to review its history. This sequence of URLs has been recorded and is updated in controller 103 as the session progresses. The user of, U-N is also afforded an option to browse new HTML documents synchronously with other collaborators. When that option is exercised, controller 103 sends the current URL to surrogate 108-N. The latter then directs web browser 106-N to open the HTML document at the current URL. During the medical form session, when browser 106-1 initiates a change in the URL, the new URL information is obtained by surrogate 108-1, and the latter communicates this information to the surrogates of all other collaborators via controller 103. Each surrogate then directs its respective browser to open the HTML document at the new URL. As such, the collaborators manage to synchronously move from one URL to another to browse documents as the session progresses.

Other Reference Publication (1):

Souya et al. Joint Class Experiments Based on Realtime Web-browser Synchronization. IEEE Online. Jul., 15-17 1998. pp 367-372.*

CLAIMS:

3. The method as defined in claim 1 wherein said communication system includes a World Wide Web (WWW).

12. The method as defined in claim 10 wherein said communication system includes a World Wide Web (WWW) and said server system includes a WWW server.

21. The apparatus as defined in claim 19 wherein said communication system includes a World Wide Web (WWW).

27. The apparatus as defined in claim 25 wherein said communication system includes a World Wide Web (WWW) and said server system includes a WWW server.

33. The invention as defined in claim 31 wherein said communication system includes a World Wide Web (WWW).

39. The invention as defined in claim 37 wherein said communication system includes a World Wide Web (WWW) and said server system includes a WWW server.



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L3: Entry 3 of 6

File: USPT

Jan 16, 2001

US-PAT-NO: 6175842

DOCUMENT-IDENTIFIER: US 6175842 B1

TITLE: System and method for providing dynamic three-dimensional multi-user virtual spaces in synchrony with hypertext browsing

DATE-ISSUED: January 16, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kirk; Thomas	Warren	NJ		
Selfridge; Peter Gilman	Watchung	NJ		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
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APPL-NO: 08/ 888139 [PALM]

DATE FILED: July 3, 1997

INT-CL: [07] G06 F 17/30

US-CL-ISSUED: 707/513; 345/349, 707/3, 707/4, 707/5, 707/10, 707/501, 707/513, 707/517, 709/202, 709/206, 709/219

US-CL-CURRENT: 715/513; 345/419, 345/738, 345/850, 707/10, 707/3, 707/4, 707/5, 709/202, 709/206, 709/219

FIELD-OF-SEARCH: 395/200.49, 345/429, 345/355, 345/349, 345/351, 707/517, 707/3, 707/4, 707/5, 707/10, 707/501, 707/513, 709/202, 709/206, 709/219

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

Search ALL

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	5694559	December 1997	Hobson et al.	707/3
<input type="checkbox"/>	5737533	April 1998	De Hond	709/219
<input type="checkbox"/>	5801707	September 1998	Rolnik et al.	345/429
<input type="checkbox"/>	5802530	September 1998	Van Hoff	707/513
<input type="checkbox"/>	5808613	September 1998	Marrin et al.	345/355
<input type="checkbox"/>	5870549	February 1999	Bobo, II	709/206
<input type="checkbox"/>	5883628	March 1999	Mullaly et al.	345/355
<input type="checkbox"/>	5889951	March 1999	Lombardi	709/219
<input type="checkbox"/>	5903902	May 1999	Orr et al.	707/517
<input type="checkbox"/>	5905814	May 1999	Mochizuki et al.	382/239

OTHER PUBLICATIONS

Carmel, E. et al., "Browsing in hypertext: a cognitive study", IEEE transaction on System, Man and Cybernetics, Sep.-Oct. 1992, vol. 22, Issue: 5, pp. 865-884 Sep. 1992.

Johnson, R. B. "Internet Multimedia Databases", IEE Colloquium on Multimedia Databases and MPEG-7 (ref. No. 1999/056), Jan. 29, 1999, pp. 1-7 Jul. 1999.

Frecon et al., "Webpath-a three dimensional Web history", Proceedings IEEE symposium of Information Visualization, 1998, Oct. 1998, pp. 3-10 and 148.

Jasnoch et al., "Shared 3D environments within a virtual prototyping environment", Proceeding of the 5th Workshop on Enabling Technologies: Infrastructure for Collaborative Enterprises, 1996. Jun. 19, 1996, pp. 274-279.

Rogers et al., "Navigating the virtual library: a 3D browsing interface for information retrieval", Proceeding of the 1994 Second Australian and New Zealand Conference on Intelligent Information System, 1994, Nov. 24, 1994, pp. 467-471.

ART-UNIT: 271

PRIMARY-EXAMINER: Alam; Hosain T.

ASSISTANT-EXAMINER: Alam; Shahid

ABSTRACT:

A system and method is described for providing shared access to a three dimensional virtual environment synchronously with hypertext browsing. A cospace server receives a messages indicating requests for hypertext files on a network from a client. The cospace server tracks the requests and stores components or the addresses of components of the requested hypertext files. When a threshold number of clients have requested a hypertext file, the cospace server constructs a virtual three dimensional room description and sends it to the clients that are browsing the file. The virtual three dimensional room description is rendered as a virtual three dimensional room at the client, and typically includes portals to other virtual three dimensional rooms. A user is represented in the virtual room as an avatar, and can communicate with other users at other clients. The present invention enhances an installed base of conventional hypertext files such as the World Wide Web with three dimensional and social features without having to carry out any modifications of the hypertext files where they are stored.

23 Claims, 5 Drawing figures



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L3: Entry 3 of 6

File: USPT

Jan 16, 2001

DOCUMENT-IDENTIFIER: US 6175842 B1

TITLE: System and method for providing dynamic three-dimensional multi-user virtual spaces in synchrony with hypertext browsing

Abstract Text (1):

A system and method is described for providing shared access to a three dimensional virtual environment synchronously with hypertext browsing. A cospace server receives a messages indicating requests for hypertext files on a network from a client. The cospace server tracks the requests and stores components or the addresses of components of the requested hypertext files. When a threshold number of clients have requested a hypertext file, the cospace server constructs a virtual three dimensional room description and sends it to the clients that are browsing the file. The virtual three dimensional room description is rendered as a virtual three dimensional room at the client, and typically includes portals to other virtual three dimensional rooms. A user is represented in the virtual room as an avatar, and can communicate with other users at other clients. The present invention enhances an installed base of conventional hypertext files such as the World Wide Web with three dimensional and social features without having to carry out any modifications of the hypertext files where they are stored.

Application Filing Date (1):

19970703

Brief Summary Text (3):

A known method for presenting information to users connected to a network uses hypertext techniques wherein the presented information includes user-selectable areas, called "links", which function as gateways to further information. An example of a system that provides hypertext information to users is the World Wide Web (WWW) on the Internet. The WWW is a collection of websites. Each website includes a collection of hypertext files, often pertaining to a single theme. Website files are stored on a computer on the Internet called a web server, which is a server connected to the Internet and having an Internet Protocol (IP) address. A user connects to the Internet through a computer and executes software called a browser. The browser sends the user's request for hypertext information to a website, and receives, consolidates, and displays the requested hypertext information to the user.

Brief Summary Text (4):

The hypertext files stored on websites are usually presented in known systems to the user in a two-dimensional (2-D) format, although some known sites on the WWW present content in a 3-D format. Known 2-D browsers present a hypertext file to a user much as a document on a piece of paper is presented to a reader. The term "web page" denotes a hypertext file on the WWW as presented to a user. The principal difference between a hypertext page and a page on paper is that a hypertext page includes links to other pages. When a link is selected by a user using a mouse or other pointing device, the linked-to page is then automatically displayed by the browser to the user. The WWW user is able to navigate from web page to web page (and even across websites hosted on different computers) to view information that the user selects as pertinent to the user's needs. This mode of browsing to new hypertext pages using links is more flexible and interactive for the user than the printed document is for the reader.

Brief Summary Text (6):

An example of a known WWW browsing system is shown in FIG. 1. Clients A 101, B 102 and C 103 each execute browsers (not shown) and are connected to a network 104,

which in this case is the Internet. Web server computers A 105 and B 106 are also connected to the Internet 104. A request for a hypertext file is sent from client A 101 to web server B 106. Web server B sends the file to client A, where it is displayed as a two-dimensional page to the user 107.

Brief Summary Text (7):

Known WWW browsers only support solitary browsing by individual users at their client computers. Users are not aware of each other and there is no supported interaction or communication between different users, even if they are browsing the same website, or even the same web page.

Brief Summary Text (8):

Other known systems present virtual reality environments to users through a network. A virtual reality (VR) environment is a computer-displayed three-dimensional environment with which a user is able to interact (e.g., "move" through, "kick" a virtual 3-D ball) using input and output devices at the user's computer. Known VR systems include VR browsing software that is executed on the user's computer. VR browsing software can be a stand-alone program, as in the VR browser made by the Oz Virtual Company of Iceland. Alternatively, VR browsing software can be software that executes in association with other software, such as the Cosmo Player by SGI, Incorporated which runs within the Netscape Navigator hypertext browser made by the Netscape Communications Company of California as a series of plug-ins, using Java as its user interface. The VR browser sends the user's request for VR data to a computer on a network (e.g., a VR server on the Internet) to send a VR file. A VR file describes a 3-D scene or environment. When the browser receives the VR file, it displays (renders) the described 3-D scene on the client computer. An example of a VR file is one that is written in Virtual Reality Modeling Language (VRML).

Brief Summary Text (15):

A better VR environment would provide individuals with some indication of common interest, facilitating group communication among like-minded individuals.

Brief Summary Text (24):

The present invention substantially enriches the large installed base of hypertext files on websites of the WWW on the Internet by providing dynamic, 3-D VR rooms that can be associated with such hypertext files, and by enabling communication and collaboration with other browsing users. The present invention advantageously brings together a group of users who are browsing the same file or site by allowing them to communicate and associate with each other in a room corresponding to that file or site. Users conventionally browse a site anonymously to each other. For example, hundreds of individual users of the Microsoft Internet Explorer browsing a single hypertext file typically do so unaware of each other's activities on the site to which the file belongs, and without communicating or sharing the browsing experience with each other. Further, the present invention advantageously does not require any modification of the hypertext files on which it operates or of the server from which those files are transmitted.

Brief Summary Text (25):

The present invention also enables other collaborative, multi-user capabilities, such as the ability to tour the WWW as a spontaneously-formed group while maintaining group communications, the ability to collaboratively "vote" on the next stop in the tour, and the ability to attend and participate in a 3-D business meeting enhanced by shared and collaborative WWW browsing.

Detailed Description Text (2):

An embodiment of a system in accordance with the present invention is shown in FIG. 4. Clients A 401, B 402 and C 403 are connected to a network 404. Examples of network 404 include the Internet; an Intranet; a Local Area Network (LAN); and a Wide Area Network (WAN). In the embodiment shown in FIG. 4, network 404 is the Internet. A client is a computer comprising a processor; memory; a port to be connected to an input device; a port to be connected to an output device; a port to be connected to a network; an electronic data bus connecting the processor, memory, and ports; an input device connected to the input port; and an output device connected to the output port. Examples of input devices include a keyboard; a mouse; a joystick; a camera; and a microphone. Examples of output devices include a video monitor; a printer; and a speaker. In another embodiment, the network 404 is an Intranet.

Detailed Description Text (3):

Also connected to the network 404 are sites A 405, B 406 and C 407. A site is a server that stores at least one hypertext file and the software necessary to service network requests directed to that site (i.e., web server software). A site server comprises a processor; computer readable memory; a port to be connected to a network; and an electronic data bus that connects the processor, memory and port. In the embodiment shown in FIG. 4, sites A 405, B 406 and C 407 are websites on the WWW.

Detailed Description Text (24):

The present invention also allows the cospace server to use a pre-existing 3-D VR room description in place of a dynamically-generated 3-D VR room description as follows. If the owner of a hypertext file creates her own 3-D VR room description, she can add a unique tag to her hypertext file that includes a pointer to her 3-D room description. The cospace server will recognize the unique tag and substitute her room description for the room description generated by the cospace server. In one embodiment of the present invention, the cospace server asks the owner's web server to send her room description when it needed to be sent to a client. In another embodiment, the owner sends her room description to the cospace server 409 in advance, whereupon it is stored on database 414 for ready access when it is needed.

Detailed Description Text (26):

In accordance with the present invention, the user can advantageously turn off this tracking feature at will. This is advantageous when updating both windows burdens the processor of the user's client to such an extent as to cause a noticeable slowing of the client's performance, leading to delays between the time a user makes a request and the time the requested hypertext file is fully displayed in both windows. Another advantage of turning off the tracking feature is that it allows a group of communicating visitors (e.g., a tour group) to collectively visit WWW sites while maintaining group communications in the 3-D VR environment.

Detailed Description Text (30):

Yet another advantageous group feature of the present invention is that a group of participants can arrange to meet in a virtual "meeting room" provided by the cospace server. This virtual meeting room can be enhanced by visiting different WWW sites that have information relevant to the meeting. Such a meeting can be a traditional business-style meeting or a formal or informal meeting of an organization (e.g., shareholder's meeting (formal), social club meeting (informal), dating service, etc.) This group feature can furthermore be enhanced with record keeping functionality, providing continuity and automatic "meeting minutes" to enhance the usefulness of the virtual meeting.

Detailed Description Text (33):

In one embodiment of the present invention, the cospace server can set the level of granularity at the web server site level, so that all visitors to the hypertext files served by a given site are provided with a 3-D VR room description corresponding to that site, rather than corresponding to the individual hypertext files located at that site. This groups individuals who are visiting a website into a single three dimensional room.

Detailed Description Text (35):

For example, if the granularity level criterion for creating a 3-D VR room is the website, and the 3-D VR room corresponding to a website becomes too crowded, the cospace server can dynamically change the granularity level criterion to be the individual web pages of that website. The cospace server can then create 3-D VR rooms corresponding to each page of that site, and transport the avatars of the current visitors to their corresponding new rooms. This is a mechanism for automatic dynamic "crowd control".

Other Reference Publication (2):

Johnson, R. B. "Internet Multimedia Databases", IEE Colloquium on Multimedia Databases and MPEG-7 (ref. No. 1999/056), Jan. 29, 1999, pp. 1-7 Jul. 1999.

Other Reference Publication (3):

Frecon et al., "Webpath-a three dimensional Web history", Proceedings IEEE symposium of Information Visualization, 1998, Oct. 1998, pp. 3-10 and 148.

CLAIMS:

20. The method of claim 19, wherein the correlated set of hypertext files is the collection of hypertext files that comprises a website on the World Wide Web.